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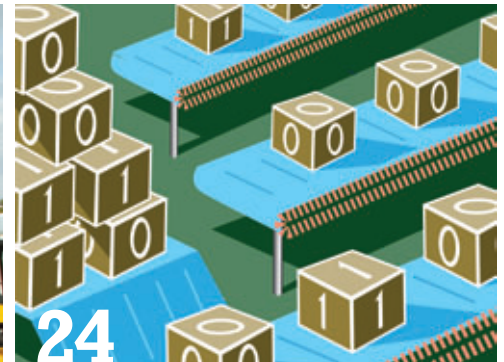
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Are You Ready for BYOD?

Advice on how to prepare your wireless network for the bring-your-own-device movement. **By David Rath**

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A Community Affair in Florida

Mixing project-based job training with core coursework, Florida's Volusia County Schools has instituted a successful community-supported career program that is churning out a new class of graduates with marketable skills in everything from robotics to the culinary arts.

By Margo Pierce

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A Time and a Place?

AS MAGAZINE EDITORS, one of our jobs is to act as information “gate-keepers.” Along with operating as human spell checkers, encouraging writers, and maintaining deadlines, we try to make educated guesses about the kinds of information and analysis our readers either want or need. It’s an inexact science that I feel like we get right more often than not at *T.H.E. Journal*—but occasionally I am caught by surprise.

For instance, I never would have imagined the storm of comments readers had to a handful of articles we published over the last few weeks on *thejournal.com* concerning the use of mobile devices in education, in general, and the use of smartphones either in or after class, in particular. I am happy to see we have such an engaged readership, but I am surprised at the depth of feeling against the use of mobile devices in the classroom.

Here is a sampling of the comments on the subject we received over a period of just a couple of days from our readers:

- “The more technology we add, the less education we are giving and the more problems we see.”
- “Take your head out of the sand. Cell phones have been a boon for the illicit drug trade and increased gang activity.”
- “What makes anyone think that these devices will be used for learning instead of gossip?”
- “Schools and teachers have no way to manage when and where the students are ‘plugged in.’ It has quickly grown to an addiction I doubt a 12-step program would help.”

I’m not stacking the deck here—most of those who commented wrote they believed smartphones and other devices had no place in school.

That would be fine, and I’d feel like our readers were telling me something I should know if I didn’t keep editing stories where

the term “anytime-anywhere” learning pops up frequently (so frequently, in fact, that I decided we had to come up with a standard style for our use of the term). In the last couple of months alone, perhaps a dozen different administrators, teachers, and technology directors have talked to me about a new world emerging in which students can learn “anytime-anywhere” and education will not end when the bell rings at 4 p.m.

This might happen, these advocates believe, because students readily take to their devices anyway and why, they wonder, shouldn’t educators take advantage of that by extending the school day. A good example might be Kathleen Fulton’s article on “The Flipped Classroom” in the April issue of *T.H.E. Journal* (see *thejournal.com/flipped*), which describes students at a Minnesota high school who are using devices to watch their math teachers give their lessons on YouTube in the evening and then devoting their class time the following day to solving problems with the help of the teacher, making better use of their time both in and out of the classroom.

This kind of “anytime-anywhere” learning might have a fighting chance if we can get past this muddle of contradictions about the proper place for mobile devices. Can such a simple tool (so inexpensive, really, that some parents give them to young children) simultaneously be an “addiction” and a key to “anytime-anywhere” learning?

This is a contradiction I hope everyone interested in K-12 education can discuss and eventually help resolve. I will be glad, as well, if *T.H.E. Journal* can be a platform for the discussion.

Continue the conversation. E-mail me at mhart@1105media.com.

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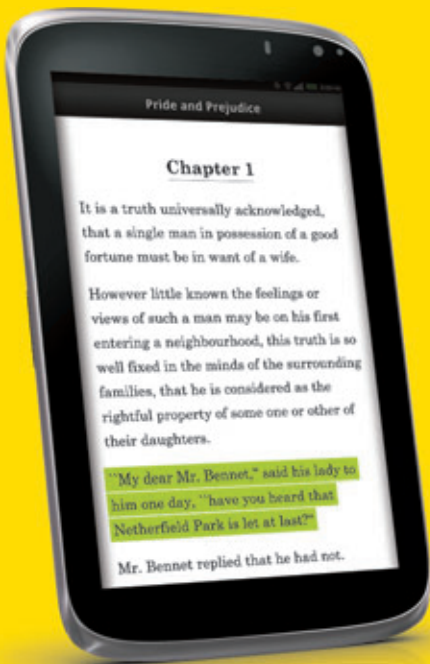
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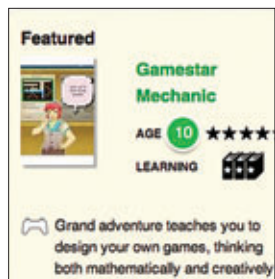
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[news]

Rating the Merits of Educational Media



● **COMMON SENSE MEDIA**, a nonprofit organization that reviews media aimed at children for parents, has instituted a new ratings initiative to evaluate the learning potential of websites, video games, and mobile apps that are marketed as educational.

As part of the initiative, reviewers will analyze a variety of media, including both conventional entertainment products and those designed for learning, in search of core academic content like reading, math, and science, as well as what the company refers to as “deeper learning and social skills,” such as critical

thinking, creativity, and collaboration. The new ratings range from “Not Meant for Learning” to “Best for Learning.”

Reviewers will also assess how engaging each product is and how it is designed to support learning. They will also offer suggestions on how users can get the most out of a given product.

“As the digital world explodes, parents need help sorting the truly educational content from the content that’s slapped with an ‘educational’ label by marketers,” says Common Sense Media CEO and founder James Steyer.

The ratings system was born out of a 2011 poll conducted by the nonprofit organization that revealed many parents are both cognizant of digital media’s potential benefits for learning and skeptical of manufacturers’ claims. According to Common Sense Media, the ratings system is based on interviews with academic experts, a literature review of key 21st century learning skills, and sampling of parents and teachers.

Currently, new ratings are available for more than 150 mobile apps, games, and websites, with more than 800 additional ratings expected by the end of 2012. Editors will also curate special recommendation lists by age, subject, or skill. To view the ratings, visit commonsense.org/learning-ratings.

[you told us]

Ban the Cell Phone

I have been associated with education since 1970, with the exception of a five-year hiatus. My wife has taught most of those years also. Cell phones have been a constant distraction at my wife’s school. They are not used for educational purposes, they are used more for parents calling students and vice versa.

Just because some innovative teachers have found ways to use cell phones does not mean the entire US public school system needs to approve their presence in an already hectic and distracted learning environment.

Having foolish parents that call students while in class cannot be stopped if the cell phone is present. They do it all the time to check on children who have no common sense life skills, and that goes for every level of student.

We need more teaching time, better help from parents and administrators on taking the reins on problem students, and less “edutainment” for the low attention spans of today’s youth.

—**Dan White, educational consultant, Bushnell, FL**

For more reader comments on the role of cell phones in schools, see thejournal.com/revisiting.

[industry update]

Pearson is teaming up with **James Madison High School**, a self-paced online school based in Georgia, to create customized e-books and print companions that will be in alignment with the new Common Core State Standards. Since 2010, more than 23 courses have been designed, focusing on course-specific websites, peer collaboration networks, on-demand tutoring, and video.

The **State Educational Technology Directors Association (SETDA)**

released a series of case studies from 28 states highlighting examples of innovative and successful educational initiatives funded through the Enhancing Education Through Technology program, part of the 2009 federal economic stimulus package. Among the cited examples are research-based programs like North Carolina’s IMPACT, which provides hardware, software, and professional development to schools in the state. Other highlighted programs focus on digital and open education resources. The report seeks to make a case for direct federal funding of education technology initiatives.

ASCD has made its entire professional development e-book catalog of more than 300 titles available on **Barnes & Noble’s NOOK Study**, a free application for PC and Mac that lets users buy e-textbooks, take searchable notes, and organize materials. Many ASCD titles are already available via its online store in various e-book formats. For more information, visit shop.ascd.org.

E2Campus is making its newly updated cloud-based bullying deterrent system, uTip, free to schools for one year if they sign up by Aug. 31. Originally launched last year, the system uses standard text messaging to allow users to anonymously report instances of bullying, and encourages schools to promote the program through the use of highly visible posters as an additional deterrent. For more information, visit e2Campus.com.

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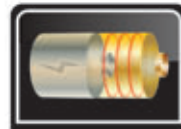
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Cutting Through Printer Waste in Your School

● In this era of fiscal austerity, the low-hanging fruit has already been picked—bus routes, field trips, conferences, sporting events, cleaning, summer school, etc. Yet one opportunity evades the eye of many cost-cutting administrators: print and copy costs. This webinar explores best practices for streamlining your print management operations. **Sponsored by Nuance**

The Digital Transition: An LMS Success Story

● Today's digital world is changing the way students and teachers interact with one another. The implementation of a learning management system will ensure a successful transition from a traditional to digital learning environment—making it both easy and seamless. **Sponsored by Instructure**

Chromebooks for Education: Classroom Technology That Scales

● Chromebooks have landed in K-12. As districts consider Chromebooks for Education for their 1-to-1 computing initiatives, take a look at what these devices promise for today's students and teachers. **Sponsored by Google**

Desktop Virtualization for Schools and Cost-Conscious Organizations

● Learn how Georgia's **Morgan County Schools** is using desktop virtualization to transform education and efficiency across its district. **Sponsored by Wyse Technologies, VMware**

Getting Your District Ready for a BYOD or 1-to-1 Computing Plan

● Experts reveal best practices for implementing a mobile computing plan. **Sponsored by Avaya**

[acquisitions]

Blackboard Acquires MoodleRooms, NetSpot

● **BLACKBOARD** has acquired two major players in the open source services space: **MoodleRooms** and **NetSpot**, companies that provide services like hosting and support to institutions that use Moodle. Teams from the newly acquired companies will make up Blackboard's new open source group.

"Thinking about the possibility of supporting an open source platform or multiple platforms has actually been something in the strategy context that we've thought about for years," Blackboard Learn President Ray Henderson tells *T.H.E. Journal*. "Over the past few years we've significantly added to our portfolio, both in the number of prod-

ucts we support and also, importantly, in the services realm. As we've seen this dramatic growth in open source around the world, we knew that it represented a very significant opportunity for us to introduce our own open source services business. So it's been on the radar for years."

Moodlerooms and NetSpot both signed statements of principle affirming that their work will continue to include regular contributions to the open source community, including continued code contributions, perhaps in response to anticipated criticism of the merger.

"There may be many who are concerned that our ultimate interest is in somehow using this as a feint to drive the sales of our commercial platform," Henderson says. "We wanted to be crystal clear—all of us as individuals, to put our reputations on the line—that we would be trying to conduct ourselves in a way very consistent with what grew these two fine companies."

For more information on Blackboard's move to open source, visit blackboard.com/opensource, or to read our Q&A with Ray Henderson and Moodlerooms Chairman and CEO Lou Pugliese, visit thejournal.com/blackboardspeaks.

Tyler Adds Computer Software Associates

● **TYLER TECHNOLOGIES** has acquired Computer Software Associates (CSA), a company with \$8.2 million in annual revenue that, among other things, resells Tyler's Infinite Visions school enterprise solution.

The transaction follows on the heels of two other Tyler Technologies acquisitions—Windsor Management Group and Uni-Fund—a pair of firms that provide financial and human capital management solutions for the K-12 education market.

The acquisition "immediately increases Tyler's presence in the Northwest, further unifies our Infinite Visions brand, and presents interesting new opportunities with local governments," says Brett Cate, president of Dallas-based Tyler's Local Government Division.

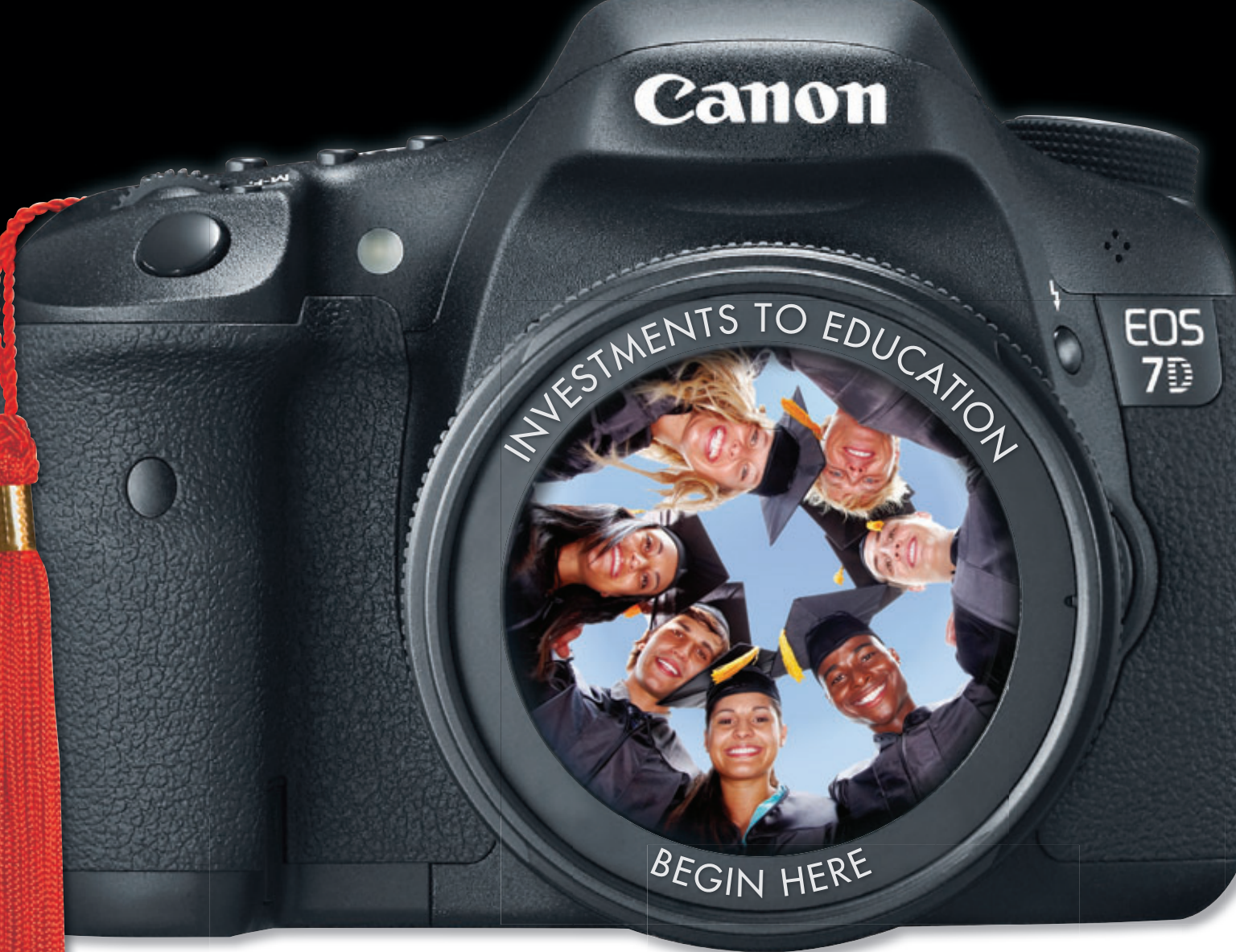
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Let the Games Begin

In support of summer reading programs, Capstone Digital has launched its 2012 Summer Reading Olympics, which awards prizes both to individual readers and the school that earns the distinction of 2012 Summer Reading Olympics Champion. The contest is open to schools using the company's myON reader.

Top prizes include an iPad to the student who spends the most time reading, a Kindle Fire to the student who spends the second-most time reading, and an iPod touch to the student who ranks third. The top 100 readers will receive myON backpacks.

Teachers, librarians, and school staff members can compete for a PolyVision interactive whiteboard for their school by promoting the contest to students and achieving the highest participation rate among schools. The program kicks off June 1 and runs through Aug. 15. For more information, visit thefutureinreading.com.



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Online Communities of Practice: What Works?

Four experienced practitioners share what they've learned about community building and collaboration.

TEACHERS HAVE GATHERED for decades in living room kaffeeklatsches to share their best ideas for improving education. But now the living room is virtual and global—and the challenges are multiplying. Four leaders of successful community of practice (COP) education initiatives came together at FETC this year to share their knowledge about and experience with best practices for online communities of education practitioners. Below is an excerpt of their discussion.

The panel was moderated by *T.H.E. Journal* Editorial Director Therese Mageau.



George



Nussbaum-Beach



Levy



Byers

The Panelists

Al Byers is the assistant executive director of e-learning and government partnerships for the National Science Teachers Association Learning Center. learningcenter.nsta.org

Melinda George is the vice president and COO of the National Commission on Teaching and America's Future (NCTAF). nctaf.org

Allisyn Levy is the senior director of education experience for BrainPOP. brainpop.com

Sheryl Nussbaum-Beach is the chief executive officer of Powerful Learning Practice. plpnetwork.com

What exactly is a community of practice?

Melinda George: I really think there is no one definition of what a community of practice is. At NCTAF, we look at communities of practice being a continuum, beginning with artisan teaching, which comes out of an expectation that there is a set of skills that most teachers know how to do. There are many individual teachers that go about perfecting the practice of their individual teaching who think, "How can I be the best at teaching that I can be?"

The next thing we see on the continuum is what we call learning communities. In this model, think about an Olympic ice-skater that is part of the Olympic team. They practice together, they learn new moves together, but at the end of the day, they are still a group of individuals, each trying to be the best they can be trying to win an individual gold medal. But at NCTAF, we believe the goal is to keep growing beyond a traditional community to build interdependent, interdisciplinary learning teams.

Al Byers: How do you overcome the culture or the structure at school to achieve these learning teams?

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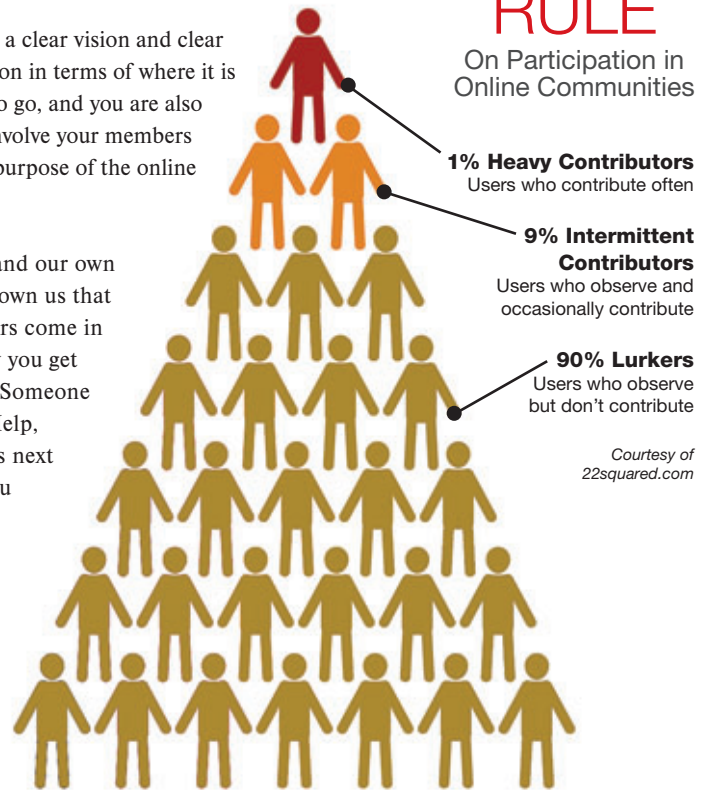
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On Participation in Online Communities



George: It's a good question and one we think about a lot. I think there has to be a leadership from the top who is willing to rethink how school is reorganized. There needs to be a chance for teachers to get acclimated to this idea and begin to think of each other as co-thinkers around some of these ideas.

Sheryl Nussbaum-Beach: One aspect of healthy communities of practice really has a lot to do with this culture piece: Are we collectively creating a culture and a climate so that there's co-ownership of the knowledge that's involved? When we think about what a healthy community of practice is, the question is: Who owns the learning?

George: We also provide through edWeb an online platform where the teachers can be talking on a constant basis. I think that online link is really critical to their success because they are in different parts of the building and they are siloed in many ways.

How do you encourage participation in an online community?

Nussbaum-Beach: Often, in traditional learning communities people will come because it's an expectation, but when you build it online you have to do things differently. In the planning and vision stream, you really do want to begin with the end

in mind. You want a clear vision and clear focus—a clear vision in terms of where it is that you're going to go, and you are also going to want to involve your members in developing the purpose of the online community.

Byers: Research and our own experience has shown us that when new members come in to our community you get one or two shots. Someone new might say, "Help, I'm teaching rocks next week. What do you have?" Research shows that the immediacy and the quality of the response [impacts] the likelihood that they'll come back.

Allisyn Levy: There is a common principle or rule called the 90-9-1 rule. We all have pretty large communities, but the number of people who actually contribute in some way is a pretty small percentage. Typically, they say 90 percent of people are lurkers who are just checking it out, staying on the DL [down low]. Then you've got 9 percent that occasionally will step up and be a little

bit more participatory, and then you've got your 1 percent of rock-star power users who you can count on for anything.

Byers: We hope that people start by trying to engage their point of need, and we hope that they extend and contribute once they see the value and once they get into the community. Then, we hope that they give back. I would call it a continuum. You might have early-career teachers who are very good with technology, so they might be a coach to others, while more experienced teachers might know classroom management better, so they can contribute that to the first-year teachers.

Levy: Another part of facilitating people to get on and start creating and using your community is structure and making sure your community meets the needs of everybody. Every time I do a webinar I always have a first-timer who has never been on one before and is just trying out the chat room. At the end of each webinar, I always give those teachers a chance to try it out

TURN ON THE CHAT

The new etiquette of online participation

AI Byers: We [at NSTA] do about 120 webinars a year in collaboration with NASA, NOAA, NSF, and NIH, and that's how we bring in experts for local deployment. We have web seminar moderators who help that conversation flow, because there's a sidebar chat that occurs.

I've been asked to present at web seminars where you can't even see the discourse or the flow—they don't even turn on the online chat. That's not right because there's a temporal community there and they're talking about where they're from and what they're struggling with. That's where you need those online moderators who can interject into the content provider's discussion and say, "A lot of people are talking about X."

Sheryl Nussbaum-Beach: It's better to enable people to be empowered if you want your community to be very active. It used to be in the 20th century that I considered it rude when people were texting or typing when I was presenting. Now, I consider it rude if I am the one who is doing all the talking.




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A FEDERAL INTEREST

The US Department of Education would like to see an expansion of the role of online communities of practice in everyday teaching practice, so it is funding the Connected Educators project, which is managed by the American Institutes for Research and five partner organizations. Darren Cambridge, AIR senior consultant on the project, named the following goals for the project:

- Deepen educator participation online.
- Create resources that can help new and existing online communities take advantage of best practices.
- Research key questions about online communities in education.
- Support and encourage innovations in online community development.
- Create new communities, where necessary, in support of goals of the National Education Technology Plan.

More details about the project can be found at ConnectedEducators.org.

and say “hello” and talk on the microphone to get them more familiar with it. You want some of that hand-holding in place.

Nussbaum-Beach: The main thing you want to think about as you’re designing is to make sure you have lots of examples and lots of modeling. At first, encourage people to co-construct knowledge. It’s out of co-constructed knowledge that a sense of community and a sense of ownership begins to develop, as people begin having really powerful conversations about what they’re working to develop, whether it’s

lesson plans, an innovation they’re working on, or a shift in PD.

What roles can members play in a COP and how do you reward participation?

Byers: We have online moderators and they’re like the concierge service. They live chat, they moderate our discussion forums, and they’re there to respond to those inquiries when people first arrive. Those online moderators rise up through a series of points and badges so that people


with high activity and high recognition can be elevated to online advisers. Many have Ph.D.s; others are master teachers. Many are science method professors or teachers with decades of experience—or they’re young teachers who really know technology because they’ve just come to the classroom and they’re more hip and engaged.

George: [In NCTAF communities] individuals are given the chance to specialize. You’re not expected to know everything. You don’t have to be the expert in all fields, and you can dig deep into the areas that are your specialty.

Byers: A year ago, we launched about 40 badges to help recognize and incentivize online participation and activity. Some badges are meant to recognize some actions that might engender more participation. Some of these badges are more arduous, take more time to earn, and are tied to final assessment or digital portfolios from teachers that are reviewed and geared toward learning and professional growth.

Levy: Rewarding and acknowledging is a huge part of an online community and a great way to give teachers a stage to share what they’re doing. You don’t have to be an expert.

Byers: What you want to do is get people to move from externally regulated behavior to intrinsically motivated behavior.

Nussbaum-Beach: I’ve seen people come in [to a community] with all the categories and the discussions and everything decided ahead of time, from the community leaders down, and then people just pick and choose what they’re interested in. That’s not what co-construction and negotiation of meaning of a community of practice is. In a community of practice, I think the emphasis should be on community. This is not an excuse for doing PD, or an excuse for delivering a course. This is building a community where each of us works from a position of collaboration. 

TOOLS TO BUILD AN ONLINE COP

Our panelists highly recommended ready-made community platforms like Edmodo and edWeb. On the other hand, Sheryl Nussbaum-Beach’s online community—Powerful Learning Practice (PLP)—went the build-it-yourself route. Here’s what she says about the tools they use:

“We use a combination of tools. Right now we’re using Ning for our community platform. It’s designed for social networking, not for building communities, but there are attributes that I do like about it. Is it my dream choice? No.

“We also use a wiki to connect with people, and we have a website—all from the PLP community hub. From there, you’re able to access the other pieces. But because we’re trying to help people become connected educators, there are lots of tools that the community members are developing. We have them bring in tools and we connect via those as well. So we have our three main tools [Ning, wikis, and website] and then a lot of our participants are designing their own things, so it really does become a montage.

“There are a lot of things to look at when you’re trying to find a platform where you can build an online COP. Look for one that allows for co-construction of white papers, decent threaded discussion, and meaningful profile sections, which is a trust-building aspect of online communities of practice. What people usually do is try to put together different web 2.0 tools, or they use tools like Drupal to put something together behind the scenes. A big mistake is trying to use a course management system to build a community. You need to pick the tool based on the purpose of what you want to use it for.”

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The Studio: Design for the expansion of Orangewood School in Phoenix's Washington School District.

Extreme Makeover: Green Schools Edition

The Green Schoolhouse Series will make gifts of state-of-the-art, multimillion-dollar green schools to underserved districts, all with the help of volunteers and corporate sponsors.

ARE YOU READY for my joke?" asks Jeff Zotara, cofounder of the Green Schoolhouse Series. "Not only are we preserving Earth's natural resources by building green schools, but we're also preserving green frogs."

Maybe it's not a zinger, but Zotara's one-liner perfectly illustrates the relationship between technology and the environment that he hopes to nurture with his latest project. That would be the Green Schoolhouse Series, whereby Zotara—with the help of corporate sponsors and volunteers—hopes to build and donate high-tech, state-of-the-art sustainable schools to low-income districts that qualify for Title I funding.

The green frogs he's referring to are those that will be spared thanks to a Lawrence Berkeley National Laboratory virtual frog dissection program that can be used on the Smart Board interactive whiteboards that will equip the green schools' classrooms. Smart Technologies is one of dozens of sponsors making the Green Schoolhouse Series possible.

Much like the popular (now canceled) television show *Extreme Makeover: Home Edition*, in which homes were renovated for needy families via donated materials from big-name

corporations like Sears, and with the help of labor from local construction companies and thousands of volunteers, Green Schoolhouse Series schools will be funded entirely by corporate partnerships, in-kind donations, and charitable contributions.

The school district and local community will collaborate on each school as well, along with the education nonprofit Brighten A Life that Zotara runs with his father Marshall and their public relations firm Cause and Effect Evolutions.

The school campus—which can take up to two years to plan, may involve as many as 80 partners, and will actually be constructed in just 30 days by a team of 750 volunteers—will be the pinnacle of 21st century green learning. Built to LEED-Platinum status criteria (the highest designation awarded by the US Green Building Council), each design features a laundry list of eco-friendly features: recycled and locally sourced materials, Forest Stewardship Council-certified wood, ultra-efficient insulation, waterless plumbing fixtures, paint without volatile organic compounds—even sustainable door hardware. There are xeriscaped gardens, a rainwater harvesting system, and sleek water bottle refilling stations.

Every school, too, is built with nontoxic materials and designed to maximize natural daylight and ventilation, which not only reduces energy costs but has been shown to benefit students' health and learning. (See the accompanying sidebar, "Green Schools: Student Health and Performance.")

Then, of course, there's the green technology: solar panels and water heaters, Energy Star appliances, an energy management system, motion sensors to conserve energy, and, in some schools, a color-coded lighting system that will provide direct feedback as to how the school is performing.

The highlight of it all? A STEM (science, technology, engineering, and math) classroom that will accompany every 6,000- to 15,000-square-foot Green Schoolhouse, complete with laptops, the aforementioned interactive whiteboards, AV equipment

from Extron Electronics, an audio amplification system, and modular furniture that will support students' collaborative, project-based learning.

Interestingly, while some of the corporate sponsors are ones you might traditionally associate with the "green" movement—clean tech powerhouse Mitsubishi Electric, for instance, or solar-panel manufacturer Empire Renewable Energy—many, like Cisco and Kraft Foods, are not.

“Without science, technology, engineering, and mathematics, there would be no green movement. Furthering our youth’s education ensures that we can be equipped to address environmental concerns.”

—Craig Jacob, president, DeVry University Phoenix Metro Area

Kraft and IGA, for example, are supplying a schoolhouse kitchen for the prototype, **Roadrunner Elementary School** in Phoenix, the first of the Green Schoolhouse series, which is undergoing renovation and expansion in anticipation of opening as a brand new campus in the fall.

What all the companies have in common though, says Zotara, is a stake in America's future workforce, which will have to be educated for high-tech, green-tech 21st century jobs. “Our scientists and engineers are moving into the future, but we've fallen behind on a national scale,” he says, citing the 2009 Programme for International Student Assessment, which ranked US students 17th for science literacy among 34 industrialized nations and 25th for math.

Craig Jacob, president of DeVry University's Phoenix metro area, echoes that sentiment. (DeVry is sponsoring the STEM classrooms at Roadrunner Elementary as well as those at **Orangewood School**, another Green Schoolhouse recipient in Phoenix's **Washington Elementary School District**, where the expansion of an existing campus is under way.) “Without science, technology, engineering, and mathematics, there would be no green movement,” he says. “Furthering our youth's education in STEM fields ensures that we can be sufficiently equipped to address environmental concerns today and in the future.”

STEM and Sustainability

For the Washington school district, addressing those environmental concerns was a core focus even before it became the beneficiary of the inaugural Green Schoolhouses. Four years ago, the district decided to embark on an aggressive energy conservation and sustainability program.

The first two years of the program focused solely on changing energy behavior—reminding students and teachers to turn

in electricity costs. In the third year, the district continued its behavior program and retrofitted its lighting, saving another \$2 million. “The total cost to create this project was 50 percent of my salary plus the cost of the lighting retrofits—and I only work 20 hours a week and consult with other school districts the rest of the time,” says Sue Pierce, director of the Washington school district's facility planning and energy department.

off the lights when they left the classroom, shutting down computers, and closing the door when the air conditioning was on so hot air wouldn't seep in.

In a district with just over 25,000 students, the effect was cumulative, not to mention impressive: a \$2 million savings

So when the opportunity to apply for the Green Schoolhouse project arose, “it was a natural fit,” says Orangewood School Principal Andree Charlson. The school, which prides itself on its environmentally focused learning, was also in desperate need of additional classroom space. Before

Green Schools: Student Health and Performance

Green schools aren't just good for the planet; they're good for students' health and learning, too. According to a 2006 Capital E report called *Greening America's Schools* that was cosponsored by the Federation of American Scientists and the US Green Building Council, among others, students in healthy schools (i.e., schools with nontoxic materials, adequate ventilation, and that utilize natural daylight) are absent less often and perform at a higher level. One recent study cited in the report, of green schools in the state of Wash-



ington, found a 15-percent reduction in absenteeism and a 5-percent increase in test scores. That's not surprising, considering the abysmal condition of so many conventional US schools. According to the same report, some 55 million American students attend schools that are unhealthy and restrict their ability to learn. The National Center for Education Statistics, in fact, estimates that American children miss more than 10 million school days each year as a result of asthma and other respiratory ailments related to poor indoor air quality.

Think that green schools sound great, but they're not feasible given the current economy and the budget cuts most districts are now facing? *Greening America's Schools* found that building a green school costs less than 2 percent more than traditional construction—yet offers 20 times the financial benefits, like lower energy and water costs, improved teacher retention, and lower healthcare costs. The full report is available at www.usgbc.org/ShowFile.aspx?DocumentID=2908.



Ground was broken on an expansion of Oranewood School in Phoenix's Washington Elementary School District earlier this year. When renovations are completed in December, the new high-tech, state-of-the-art sustainable school will highlight the campus' STEM curriculum.

the expansion project, music and art classes were sometimes taught in hallways or even outside in the oppressive Arizona heat. When groups had performances or large presentations were scheduled, students had to walk two miles to facilities at the nearest high school.

These treks will be a distant memory, however, when Oranewood opens its 6,000-square-foot, \$2.5 million Green Schoolhouse this December. The design, dubbed "The Studio" (there are three different customizable Green Schoolhouse models: one each for elementary, middle, and high school), will have a performing arts focus with stages and a recording studio.

Charlson and the teachers are particularly excited about the potential for environ-

mental education in the Studio's STEM classroom. "The teachers are working together to design lesson plans that utilize the features of the new building," Charlson says—features like the school's solar panels and rainwater harvesting system. "They'll be able to focus on hands-on investigations covering subjects like recycling, water reclamation, and ways that solar energy can be used in daily life."

Oranewood will also use the new STEM classroom as the hub for the robotics program it runs for its middle school-aged students in conjunction with DeVry University and Arizona State University. Each year, a challenge is introduced to the robotics students, who work collaboratively to create a robot that will perform specific

tasks around their school. Last year, the theme was food safety; this spring, it will be alternative energy.

All this is even before the new Green Schoolhouse has been constructed. One can only imagine the types of green tech projects that will be realized in the many years to come.

While Charlson is "excited by the opportunities this will allow us to share with our students," it's not lost on her that by receiving a Green Schoolhouse, her district now stands among the most privileged.

"Can a Green Schoolhouse model be replicated on a larger scale?" Charlson asks. "With regard to the ideology, educating our children in energy-efficient facilities that demonstrate principles of long-term energy conservation and environmentally friendly materials, the answer is an emphatic 'yes.' We not only can, but we have an ethical obligation to our children to try." [the](#)

Jennifer Grayson is a Los Angeles-based freelance writer who focuses on environmental issues. She maintains an environmental issues blog at theredwhiteandgreen.com.

LINKS

- **Brighten A Life**
brightenalife.org
- **Cause and Effect Evolutions**
causeandeffectpr.com
- **Cisco**
cisco.com
- **Forest Stewardship Council**
fsc.org
- **Green Schoolhouse Series**
greenschoolhouseseries.org
- **Lawrence Berkeley National Laboratory**
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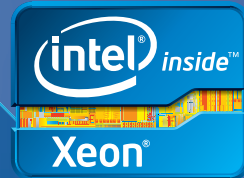
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Textbook Adoption Opens Up the Field

As more digital content becomes available to teachers and students, and as state boards of education relinquish the tight control they have had on textbook selection, who will determine which educational materials are the right ones to use? Most likely, you.

THE BEST FREE show in Austin every November is a meeting of the Texas State Board of Education. That's the meeting each year that features hearings on proposed textbooks. Individuals from every end of the political, social, and educational spectra—affectionately called the Wingnuts—testify to the quality of the textbooks proposed for adoption in the entire state.

Because Texas is one of the country's largest single markets for textbooks, in the past the outcome of those hearings and the education board's deliberation have affected schools and students from Alaska to Alabama—but things are changing. Beginning this year, that impact will be diminished due to changes in Texas state law that will allow school districts to select their own textbooks, even if the state board deems them unacceptable. The local superintendent and school board must certify that the district is teaching all the state standards and has sufficient materials to do so, but that is their only limitation.

Taking the absolute power to declare winners and losers in the textbook market away from the state and giving it to the local districts also gives the latter some flexibility, but it raises a legitimate question: If the state vetting process is diminished or demolished, who has the authority to decide which textbooks are “okay” or “any good”? That leads to a second, even more important, question: Given the steady accumulation of digital content available to school districts, who decides which of it is “any good”?

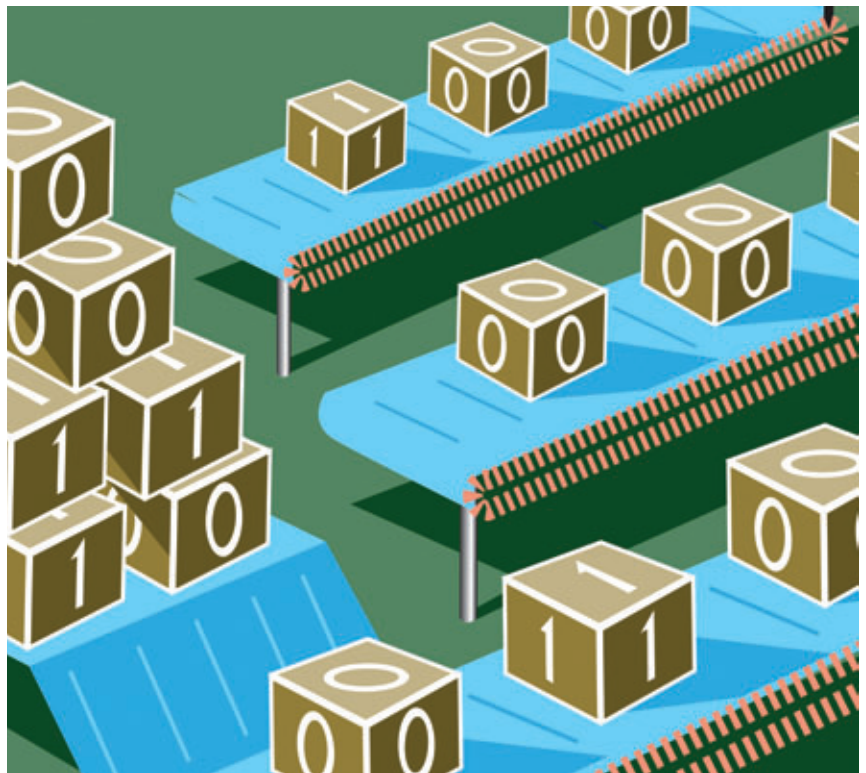
For years, about half the states in the country—sizable markets like Texas, California, and Florida among them—selected winners and losers at the state level. The states decided what they wanted in their textbooks and the publishers tried their best to fill the orders. The states—usually on the advice of committees of practitioners—would pore over the proposed textbooks looking for evidence of alignment with state content standards. Some states even paid attention to additional

standards such as pedagogy, proportionate depiction of diversity in race and gender, and other, occasionally hidden, “standards.”

Committees made recommendations (often to a state board of education), hearings were held, and winners declared. School districts then selected their textbooks from among those given passing grades.

That approach to vetting content is changing. Districts are beginning to realize how much technology and digital content is available to schools and want more flexibility in how they use their funds. In response, some states now allow “textbook money” to be used to purchase technology or even professional development and technical support. As purse strings have loosened, other components of the textbook selection process have become more flexible as well.

Indiana is a good case in point. Not only did the state legislature change the definition of a textbook to include digital content, it now allows textbook funds to be used to purchase that content and to pay for technol-



Chad J. Shaffer

ogy as well. At the same time, it took the state almost completely out of the vetting process. Now, the state looks at proposed “textbooks,” determines the extent to which they address the Indiana state standards, and publishes a list documenting the alignment or lack thereof.

With one exception, school corporations (as districts are called in Indiana) do not have to use the list in their decision-making if they choose not to. That exception is in the area of reading, where the state still creates a list of winners from which school corporations are required to choose. In general, however, as Indiana Superintendent of Public Instruction Tony Bennett says, “We’ve stopped pretending that the state board of education is the biggest school district in the state.”

Putting aside for the moment the obvious question of whether or not state-vetted textbooks were any good for all the students they were supposed to serve, let’s consider how school districts are to be assured that the vast array of content available now is aligned to state content standards.

Open Season

In other words, how do we move from a one-size-fits-all-textbooks world where everything is vetted by the state to one where educators can sift through an insurmountable raft of materials available from various media today? How do we find our way to a world in which teachers take responsibility for their own materials and use the ultimate vetting tool—student success?

One approach may be that taken by the **Open High School of Utah**, which pays faculty \$10,000 to create the content and curriculum for each online course. All the content and materials are licensed as open educational resources (OER), allowing them to be shared, reused, remixed, and otherwise altered by anyone to fit the individual needs of students. Then, once teachers begin using the materials, they monitor how well students are doing and attempt to analyze what impact the course materials may be having on learning. They then modify the materi-

als, reteach, and then reassess how well the students are doing.

The thinking is that, in creating the course in the first place, teachers have amassed a lot of the content and are familiar with much more. The answer to whether it is “any good” is whether student learning is positively affected. This approach is rubbing off elsewhere in the state, as the Utah State Office of Education recently announced it will develop and support open textbooks in key curriculum areas.

The state of Maine has launched a project that, while still in its early stages, also shows great potential. Maine used its American Recovery and Reinvestment Act Title II-D money to fund a grant program focused on integrating OER into the daily math curriculum. The goal is to provide professional development that will increase awareness of OER and build an online community for sharing and evaluating OER.

Working with nonprofit partners, the state created a comprehensive package of math instruction resources for teachers that focused on a few key algebraic concepts that students seemed to be floundering in. The professional development was designed to use OER and technology tools to support the connections between and among assessment practices, curriculum, and instruction. (See “The Water Bed Effect,” January 2012.)

One team created a series of lesson sets organized by targeted mathematics topics, such as the distributive property, that included lesson materials, diagnostic assessment tools, information on analyzing data, classroom implementation and instructional resources, and a post-assessment tool.

After significant training, teachers analyzed student data and selected instructional resources and areas of focus using online applets and student explorations. They reassessed the students, reexamined resources, and, over the course of the year, the teachers and development team modified resources and created new ones.


Not every district or state can generate these kinds of professional development

and instructional resources, but the beauty of OER is that they don’t have to. Any educational entity can start with what Maine has already done, add to it, and do so legally since it was developed under a Creative Commons license that not only allows, but encourages, such sharing, remixing, and reusing.

The vetting of the content doesn’t come by way of teachers saying something doesn’t work or is no good. Instead, the content gets modified and made better—at least for the teacher willing to improve it.

In addition to projects such as Maine’s, organizations are creating tools for teachers to use. Achieve is an independent, bipartisan organization that was intimately involved in the creation of the Common Core State Standards and is the project manager for the Partnership for Assessment of Readiness for College and Careers (PARCC), one of the two major Race to the Top assessment consortia. It has created eight rubrics to help teachers and other users determine the quality of OERs, although they can be applied to all content.

Other tools under development that I have viewed—but cannot yet speak about in detail—will rate content in ways similar to Amazon’s rating system or will use a system like Facebook’s to “like” content. Developers of these products feel that if crowdsourcing is useful in the commercial world, why not in education?

As more technology enters the classroom; as the creation, distribution, acquisition, use, and reuse of content becomes more flexible; as we move more fully into an iTunes world and out of one in which state boards of education pick winners and losers, will there still be a place for today’s comprehensive textbooks? I believe they have a lot to offer, but their creation, distribution, and acquisition will evolve to meet the needs. This change in vetting is the proverbial tip of the iceberg. 

Geoffrey H. Fletcher is deputy executive director of the State Educational Technology Directors Association.




What Are They Thinking?

Leadership Insights on Issues in Educational Technology


Program Summary:

The proliferation of mobile devices and the push toward collaborative learning in today's K-12 schools has presented new security challenges for district IT departments. How do schools and districts ensure the security of their infrastructure while fulfilling the needs of new learning initiatives? *THE Journal* spoke with two schools and security vendor SonicWALL to get their insight.

MEET THE CONTRIBUTORS



Matt Federoff, chief information officer, Vail School District, Arizona



Jessica Levene, learning technology specialist, Volusia County Schools, Florida

What does collaboration mean to today's digital learner and why is it important?

JESSICA LEVENE: Collaboration for today's digital learner means more than being able to interact

and work towards a common goal with someone in a face-to-face setting. Today, collaboration includes being able to communicate and contribute to a common task with individuals from all over the world using mixed modalities. With the ability to asynchronously work on a cloud document or use real-time chat features to create a web-based presentation, today's learners must develop digital citizenship and communication skills. Working in groups to create original ideas and evaluate sources will enable learners to succeed in today's technology-rich environment.

....Read Jennifer's complete response by visiting www.thejournal.com/sonicwall.

TECHNOLOGY INSIGHT FROM SONICWALL: With the ever increasing volume of traffic driven by user collaboration—including large media file attachments and links to streaming content—throughput is now a major consideration in evaluating security equipment. The closer to line speed a security measure performs, the better. Some organizations seek to address the issue with increased bandwidth and an increased number of switches accessing the network, each with their attendant security measures and often load-balancing solutions in front of it all.

This can get expensive and complex. And any piece of equipment through which traffic passes can become a chokepoint. Underpowered processors or store-and-forward architectures in the appliances can introduce latency into the flow. When threats are detected, remediation can further slow traffic. Fewer, faster systems can assure better performance and lower costs.

What is the role of anytime, anywhere learning in K-12 education?

JESSICA LEVENE: I remember when "homework" was a dreaded word because it meant learning and completing schoolwork

outside of the classroom. However, in today's digital world, the role of anytime, anywhere learning is essential in education. We live in an information-rich society where students are accustomed to using a mobile device from anywhere at any time to find information. Our 21st century digital students are constantly learning every time they Google a question or catch up on the latest news on Twitter. Although this is considered informal learning (and in some cases may not be the most reliable information), the underlying premise is that students are seeking information. This momentum can be applied to K-12 education because we can use students' desire to access information and socialize by providing web-based digital content and tools accessible 24 hours a day, seven days a week. Many teachers, schools, and districts have already initiated this by creating online discussion areas, class websites, and web-based desktops where students have access to their course materials and a way to engage in social learning with their peers. With Web 2.0 tools and mobile devices, both students and teachers can create websites, update blogs, and create digital books to share with all students in the class for anytime learning.

....Read Jennifer's complete response by visiting www.thejournal.com/sonicwall.

TECHNOLOGY INSIGHT FROM SONICWALL: Secure Remote Access (SRA) has moved from a small, precious component of the network for a core constituency to become the vast outer ring of the network serving many—if not all—users. Of course, users can fall into several different groups, each of which has its own needs and permissions. The smarter the remote access solution, the better the user experience and the easier it is to manage.

Trusted users can be expected to gain access via devices with client controls in place. Casual users cannot, especially with the proliferation of various endpoints like tablets and smart phones. Intelligent SRA can recognize the different levels of control required, prioritize traffic accordingly (including latency-sensitive streams like VoIP and video), and integrate with intelligent security appliances to enforce centrally managed policies.

What are the top three challenges for any district in implementing an effective, safe and secure 21st century learning environment?

MATT FEDEROFF: First, high quality wireless service that covers the entire site, and allows multiple wireless networks and authentication methods. Second, a robust authentication system that can be leveraged across all Web 2.0 tools to improve ease of use and prevent unauthorized use. Finally, a powerful but highly granular content filter that can make filtering decisions based upon user identity, machine identity, and subnet.

INSIGHT SERIES

EDUCATION LEADERS ON...

TECHNOLOGY INSIGHT FROM SONICWALL: The technical expression of how users are interacting with the network is on the application layer. The applications users are running are either permitted, or not. Inside the permitted group, some applications deserve higher priority than others. Next-Generation Firewalls supplying Application Intelligence, Control and Visualization (AICV) enable granular scanning and filtering for the most targeted and intelligent security possible. This improves the quality of threat detection—especially the new web-borne application layer threats—and minimizes the disruption when threats are detected. It also gives IT administrators application-level controls for policy enforcement and traffic prioritization.

These capabilities can, in effect, free bandwidth and allocate it where it is most needed. They can automatically implement policy and prioritize flows by application type and user. And they can provide the analytics necessary to fine tune the network moving forward.

What are the biggest mistakes you've seen a district make in securing their school networks for digital learning?

JESSICA LEVENE: As districts continue exploring options for secure digital learning, one mistake would be trying to establish a school network with a “one-size-fits-all” approach. It is important for networks to provide ALL users with filtered, age-appropriate content, but not having an option for granular access may result in a secure network that does not address the needs of students and teachers. For example, a district may choose to use individual student accounts for authentication to the network. While the majority of students will have every “gaming” category blocked, there may be instances where a specific group of students and teachers need different access. As part of the curriculum for a “game design” course, students may need to explore and evaluate current games to develop knowledge they will apply for their course project. Without granular access, a district would not have the option to provide a specific group of students tiered access. Establishing a flexible, customizable network that remains secure and safe will avoid securing a school network that is too restrictive it is not conducive for learning.

TECHNOLOGY INSIGHT FROM SONICWALL: Regardless of how the network is accessed—wirelessly, via a web portal, or directly (including Secure Remote Access)—even the most comprehensive Acceptable Use Policy must ultimately be enforced by the firewall. Aided by Application Intelligence & Control built into Next-Generation Firewalls, the right application controls are granular enough to enforce permissions by application, by user group (say, students vs. faculty) and even by individual users. This is also a more targeted way of implementing content filtering, simultaneously satisfying regulatory requirements and providing a better user learning experience. The permissions can be modulated from full on to throttled to blocked...even by time of day or point

of origin. What's more, this Application Intelligence—knowing who is using what applications—is an invaluable tool for addressing regulatory compliance audits and budget planning.

This enables an optimization between real, important security issues and the best user experience possible. It also relieves users and administrators from struggling with human behaviors and focuses network management where it is most practical: how the network and applications behave.

What's the best advice you would give a district about securing their networking infrastructure to ensure a safe and effective 21st century learning environment?

MATT FEDEROFF: Use IP subnets to break your network into meaningful sections. For example, put your teachers on one wireless network and your students on another one. Or assign a high school to one subnet, and the elementary to another. With this you can apply different wireless networks and filtering rules to each subnet, giving great flexibility, and improving your user experience.

TECHNOLOGY INSIGHT FROM SONICWALL: Network topologies informed by needs and usage patterns require segmentation by security needs as well. User subgroups exist at multiple physical locations around a district. Some campuses might have wireless access throughout, while others may be strictly hardwired. This can raise huge issues for network management and place burdensome demands on IT administrators' time.

The solution is to maximize the integration and intelligence of the security infrastructure to increase visibility across the entire district and to enable policy enforcement from a central point of control. Intelligent wireless access points can not only thwart unauthorized access, but recognize rogue access points plugged into the perimeter. Next-Generation Firewalls performing Application Intelligence, Control and Visualization can further manage access and permissions by user group and even time of day, regardless of their physical location. The intelligent devices can all be managed from a central web-based console that is accessible to IT from any computer at any time of day.



For more information and to download the full report, please visit SonicWALL's Resource Center at thejournal.com/SonicWall.



Are You Ready for **BY**



dy

BYOD?

Advice from the trenches on how to prepare your wireless network for the bring-your-own-device movement.

By David Rath



W

HEN STUDENTS AND STAFF

returned to school in the **Jordan School District** (UT) after the 2011 Christmas break, Ron Bird could see that the number of devices on the wireless network had jumped by several hundred compared to pre-vacation levels. "I figured that was just whatever Mom and Dad bought kids for Christmas," says Bird, the district's network and technical services manager. "That's how fast the demand for access is growing."

Nevertheless, Bird and his colleagues felt like they were prepared. They already had spent several years building out their wired and wireless infrastructure, anticipating the emergence of the bring-your-own-device (BYOD) movement. "We knew the students were starting to bring their devices," Bird says, "and we would have to support that." Just over a year into BYOD, Jordan now supports approximately 2,000 students who bring their own devices to school.

Bird's experience in Jordan comes as no surprise to Philip Wegner, president of SecurEdge Networks in Charlotte, NC, which specializes in developing wireless networks for the K-12 sector. Wegner notes that just a few years ago he dealt almost exclusively with district-owned Windows-based PCs. "Now it is much more heterogeneous, with iOS and Android devices," he says, "and, with the BYOD wave, even networks built in 2008 are starting to be outdated."

Many districts around the country face the same issues Jordan did as they launch their own BYOD initiatives. Putting aside the instructional questions, the infrastructure issues alone can be daunting.

T.H.E. Journal asked four K-12 technology leaders from all over the United States to describe the paths they took to BYOD, the preparations they made, the lessons they learned, and the most important questions they asked—or wish they'd asked.

Little by Little Hanover Public School District, Hanover, PA

Key to BYOD readiness: Years of gradual improvement to the wireless network

Top question to ask vendors: Can you segregate the BYOD traffic on the network?

When the school district in Hanover, PA, launched its BYOD program at 500-student **Hanover High School** last October, it already had several years of growth in its wireless infrastructure to build upon.

"We did have to make some adjustments to the wireless network for the BYOD project, but not as many as we had thought we would," says David Fry, the district's technology coordinator.

Hanover had started beefing up its wireless system in anticipation of moving to a 1-to-1 laptop program, but—as is the case in many districts—funding for an entire transition is not yet available, so a BYOD program became an incremental step. Five years ago, Hanover started with a much smaller iteration of wireless that had controls at individual access points. "But that proved unmanageable as we wanted to grow," Fry says. "We wanted a system with a central controller."

So, three years ago Hanover chose a system from Ruckus Wireless that added access points, but also the tools to adjust signals and do load balancing. "In many cases, that means dialing it down in cases where we have seven or eight access points overlapping," Fry says. (When laptops switch access points, it can sometimes cause dead periods that last as long as 10 seconds.)

"Ruckus also has tools that do a background scan and allow me to see any rogue access points," he explains. "Sometimes they are just in somebody's house near a school, but it does allow us to switch away from that channel."

Most consultants recommend placing BYOD traffic on a dedicated virtual network, separate from the district's own network, so there is no chance of those devices accessing budget or human resources data, which is the approach Fry took when he was building his network. "So now we have two different wireless networks," he says, "one for district equipment and one for personal electronic devices."

Using Ruckus' ZonePlanner, Hanover was able to handle that design process in-house. "We knew early on that we wanted

BEFORE YOU EVEN START...

When dealing with the technical and security issues associated with launching a BYOD program, one of the first decisions has to be whether you are going to outsource the function, seek consulting help, or make it a do-it-yourself project. Do you have the expertise on staff to design and manage the expansion of a wireless network?

Even if the answer is yes to that question, can you handle what is sure to be a dynamic, growth-focused situation in the future? Keep in mind something the IT consulting firm Gartner has estimated: 80 percent of newly installed wireless networks will be obsolete by 2015 due to improper or insufficient planning.

Philip Wegner, president of SecurEdge Networks in Charlotte, NC, details some of the specific network infrastructure requirements that any districts considering a new BYOD initiative should take into account before they begin their work:

- **Capacity vs. coverage.** Wegner suggests district technology leaders think about the capacity of the proposed network, not just coverage of areas. If an auditorium has just one access point, it could quickly get overloaded. "You have to have the density of coverage to support users and be able to plan ahead and design for that," he says.
- **Directory services and device registration.** You'll need a database of the user groups and the devices registered to each user, Wegner says. The credentials created for each person in your directory service should also be used to authenticate the user on the wireless infrastructure so that you have one database of users accessing the network.
- **Role-based access control.** You'll want to segment user groups based on role, and limit what they can access. Your system must have directory services integration and be able to assign roles to users. "For instance," Wegner says, "students might be limited to using the network to access the internet and their own files," while faculty and staff might be able to do more than that.
- **Application-level filtering.** The latest generation of firewalls has application-level filtering and control. That is, they know which applications students are using and which sites they are trying to access, Wegner says. That allows network administrators to write specific policies about how much bandwidth each student can use when accessing YouTube, for instance. Wegner also suggests having network traffic flow through a device that checks for viruses or malicious activity.

There are many wireless vendors to choose from, adds David Soper, president of netDirective Technologies in Melbourne, FL. But conducting a needs analysis and understanding compliance requirements up front will help you narrow down product choices. As an example, he points out, "One mistake we see some schools make is starting out buying consumer-grade access points with no form of centralized management. They just buy off-the-shelf products and hope for the best. But without a centralized controller, there is no way to see what is happening on the network or to detect rogue access points."

to do that," Fry says, "and the Ruckus design tools made it pretty easy."

One limitation is that there currently is no printing option from a personally owned device. This might change as the district updates the way the school's printers are configured. Until then, students have the option of accessing their document from a school computer when they want to print something.

No More Wild West Jordan School District, UT

Key to BYOD readiness: Made good use of vendor site survey and network design tools to compute bandwidth and throughput estimates, which helped determine the best places to put access points

Top question to ask vendors: Does your solution offer spectrum analysis so we can see what is happening on the network and make adjustments?

A few years ago, Utah's Jordan School District was the Wild West when it came to wireless network infrastructure. Each school in the district, which serves more than 50,000 students in the communities of Bluffdale, Copperton, Herriman, Riverton, South Jordan, and West Jordan, did its own thing about wireless access. They used a hodgepodge of different equipment and, of course, ran into radio frequency interference. One group of teachers, with the best of intentions, bought 10 Linksys access points but, because they didn't understand the settings, were never able to route them anywhere.

"We used examples like that to make the case for an enterprise wireless network districtwide," recalls Bird. "We looked at other vendor options but decided to go with 3Com, largely because we already used their switches and phone equipment. After an investigation, it seemed like the simplest thing to do." (HP has since acquired 3Com.)

Jordan's network has grown rapidly to 310 sensors for 1,300 access points, a

little more than four per sensor. The district now has 2,000 students

who bring their own devices, with another 5,000 school-assigned devices on the wireless network and about 15,000 on the wired network.

How did Bird know he would have enough access points in the right places to provide good performance for so many devices? He and his staff got floor plans for all the buildings, including information about where all the brick walls were, from the facilities maintenance team, he says. The 3Com network design tool pulls all that information in, computes bandwidth and throughput estimates, and then tells you the optimal places for your access points. "There was no way for us to know whether it was going to be accurate or not," Bird says. "We just had to cross our fingers. But we have actually been very pleased with it."

With a site survey tool within Fluke Networks' AirMagnet product, Bird can stroll the campuses and measure signal strength. "We do get complaints about performance at times from students or teachers," he says. "Usually it is not the network itself, but something like a wireless microphone or camera causing interference."

Previously, a wireless audiovisual system might have caused interference with a network. Bird's team would get a call from a middle school, for instance, and by the time they got there, the device would be off and put away and the network would be working fine. "It was frustrating," he says. "We couldn't pinpoint the problem without these tools."

With the spectrum analyzer, sensors track wireless access points, then the system triangulates where the interference is coming from.

Love Your Network Park Hill School District, Kansas City, MO

Key to BYOD readiness: Upgrading to 802.11n technology

keyword: byod
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Top question to ask vendors: Can you demonstrate flexibility and agility in the wake of changing needs?

In the fall of 2011, **Park Hill School District** in Kansas City, MO, piloted BYOD with a segment of the student population and staff. As he planned to open it up to everyone else at the district's two high schools this spring, Brad Sandt, Park Hill's director of technology, says the growth of the enterprise wireless network has been an evolutionary process, but the biggest change was the upgrade to 802.11n.

"The technology enhancements with the 802.11n standard over the a/b/g standard have been noticeable," Sandt says. "We have had few signal-connection issues, and the speeds are significantly higher." (The access points have the potential for 600-Mbps speeds.)

The upgrade of the core switching network and wireless network cost approximately \$1.3 million, which covered switches in 19 facilities and 750 access points. One of the high schools now has about 200 BYOD devices that are regularly on the network; district staff members have registered more than 300 additional devices to date on a separate staff BYOD network.

Park Hill has always used Cisco Systems equipment, so Sandt believed it made sense to stay with Cisco for this evolution. The district uses M86 Security for its web filtering and reporting functions. "We leverage a RADIUS server for authentication, authorization, and MAC filtering to register the device, so that process is seamless to the students on their iPads," he says. "They sign on to the network just as your device would if you were staying at a hotel."

"The challenge we missed early on was how much love you have to give the network," Sandt says. "We learned it requires constant attention, nearly on a daily basis. Access points may fail. It may require more resources than you originally think. It's possible that you could outsource the management function at some point but, when we have looked at that in the past, we

haven't found anyone with the expertise we are looking for."

Park Hill went to the reseller and consulting firm CDW-G for advice on best practices and potential future technologies. "They have played a critical role in helping us plan for and anticipate changing network environments," Sandt says. "We continue to enhance, troubleshoot, and modify our network based on changing demands, environmental conditions, and experience. I would strongly suggest that districts planning on wireless deployments view them as continual projects, instead of a one-time project."

With that in mind, Sandt says, the most important thing to ask vendors about is flexibility and agility: Is it a system you can keep building onto as the number of users on the network grows? He says consultants told him that systems from companies such as Aruba Networks, Cisco, and Aerohive Networks are designed to add capacity easily. But other vendors in your ecosystem should be flexible as well, Sandt stresses. "What happens if I need a new level of security?" he asks.

Partners for Life

Holy Trinity Episcopal Academy, Melbourne, FL

Key to BYOD readiness: Contract out to a wireless network management team that can continually fine-tune the WLAN to improve performance.

Top question to ask vendors: How does your solution deal with our specific building parameters?

As the 840-student PreK-12 **Holy Trinity Episcopal Academy** in Melbourne, FL, prepared to pilot BYOD last year, Susan Bearden, the school's director of information technology, realized the most important decision she made was selecting the right service provider.

Holy Trinity began the pilot with its 11th- and 12th-graders, Bearden says. It now has about 300 students bringing their

own devices to school. The BYOD effort required a number of changes to the wireless network infrastructure at Holy Trinity. Frank Huston, vice president of netDirective, its service provider, remembers an early conversation with Bearden.

"We knew this [BYOD] train was coming," he says. "The question was, 'Are we going to get on it or get run over by it?' We had to address content filtering, and we had to take into account the possibility of growth. The coverage had to be scalable, and we had to make sure the access points wouldn't get overloaded."

Holy Trinity has separate campuses for its upper and lower grades, each with its own wireless network and its own controller. The upper school already had a system that had been installed by Meru Networks before netDirective got involved. Because there is less demand in the lower school, netDirective decided the relatively sophisticated Meru system would be "overkill" and instead installed HP ProCurve, which Huston described as a simpler, more economical solution. The plan is to eventually have one vendor's system that will be in place across both schools.

"We began partnering with netDirective Technologies in 2009, in part because we are able to take advantage of their skill set in network design and administration," Bearden says. "They have experience working with multiple companies and, in this particular area of IT, that is expertise we are willing to pay for." (NetDirective is in the process of merging with Artemis International Technologies.)

Huston suggests interviewing at least three wireless network vendors in depth to get a true evaluation of whether they can address a specific customer's needs. "I talked to the engineers and the sales team to explain what we needed and I had to get an understanding that they have worked in a K-12 environment. This school has areas with concrete structures, and density is a big issue. You have to ask vendors how their solution fits into that space. If they are not asking you for your floor plans, that

is a red flag."

Bearden says she has grown to appreciate the fact that a wireless network is not something you simply purchase, set up, and then leave alone. It requires continual adjustments based on usage growth.

Often usage will shift as a room is rearranged or put to new uses, Huston notes. The netDirective executives are fans of high-gain antennas to boost signal strength, especially on large campuses. "You have spikes in usage you have to deal with, and it is never a static solution," Huston says.

Bearden says BYOD has been a huge student and parent satisfier so far but, she adds, if you are going to make the investment, you have to make sure it is working consistently. "If there are bumps in the road, you have to address them quickly," she says, "and take them seriously because now you are disrupting what they are doing in the classroom." [the](#)

David Raths is a freelance technology writer based in Philadelphia.

LINKS

- **Aerohive Networks**
aerohive.com
- **Aruba Networks**
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- **CDW-G**
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Mixing project-based job training with core coursework, Florida's Volusia County Schools has instituted a successful community-supported career program that is churning out a new class of graduates with marketable skills in everything from robotics to the culinary arts. **BY MARGO PIERCE**

a community affair IN FLORIDA

Volusia County (FL) Schools' Career and Technical Education (CTE) program has a high school graduation rate of 95 percent. That beats the districtwide rate of 78 percent.

That's not all: The 4,500 students enrolled in 33 different career programs at 10 high schools have higher grade point averages in general (2.94 compared with a districtwide average of 2.71) and do better in Advanced Placement courses (3.12 in the career ed program, 2.86 districtwide). Finally, according to the school district, more than 85 percent of them have some kind of post-secondary education plans in place when they graduate (compared with 78 percent for the rest of the district).

Numbers don't explain everything, but

they do demonstrate the success the Volusia district has had coupling academic and job training goals, and scholarship and project-based learning with experts from throughout the community.

Achieving this result has taken 16 years of thoughtful cultivation around a unique focus—viewing the school district as a “member” of the community. A long-term commitment to building ties between the school district and civic and business leaders has made education as much a part of Volusia County as parks or street fairs. Educators and businesspeople alike make sure the CTE students get hands-on experience in the workplace, plenty of exposure in the community, and a solid academic underpinning.

Rick Fraser, president of the Volusia Center for Business Excellence (a regional job training and recruiting agency), is one of the original business professionals who helped begin the partnership program. He is still a member of the program's business partner group called the Career Connection Cadre.

"It's often been said about our area that our biggest export is our kids," Fraser says. "They go through the public school system here, they go off to college, most likely away, and they never come back. The residents, the parents who live here, are looking to give their kids the opportunity to stay here if they want. They're not going to unless we can train them and encourage businesses to grow."

The career academy concept at the heart of

the CTE program began as an economic development tool. Public education is certainly more than job training, and Volusia County didn't create a curriculum designed simply to crank out mechanics or computer programmers. The idea was to use the local business community as a platform on which to build a program that prepares students for post-secondary education in whatever form that takes, including on-the-job training.

Strong Academics

Depending on their overall career goals, Volusia's CTE program breaks students

keyword: careers
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into focused, school year-long career academies, described on the district's

website as "small learning communities that combine a college preparatory curriculum with a career focus." Housed within a high school setting, each academy focuses on a specific area of study—for instance, Law and Government, Engineering, Building Construction—that can lead either to post-secondary training in that field or employment after graduation.

Some sound fairly traditional—Culinary Arts, Agriscience, Finance—but others reflect the changing nature of the American economy—Plant Biotechnology, Simulation and Robotics, or Entertainment and Sports Marketing. Each must incorporate what Volusia officials call the "three keys" that qualify it as an academy:

An integrated curriculum: Each career academy must integrate at least one core academic subject like English, math, or science with a hands-on project related to its area of study for a minimum of nine out of the total 36 weeks of the program. Academies can choose to integrate a single, nine-week project or several shorter ones that students spend the same amount of time on.

When students in the engineering academy were learning about the science behind sound waves in their physics class, for example, their teacher asked them to research a musical instrument and then construct it.

"The kids made a trombone out of PVC pipes," explains Kelly Amy, a specialist with the program. "It showed how creative and unique these projects can really be, where teachers are excited to come up with out-of-the-box ideas to engage students and make their materials more relevant for students at all levels."

A pure schedule: For the integration of academics and hands-on training to be effective, students need to be able to work together in teams. The Volusia CTE program is organized around the concept

CAREER NETWORKING FOR KIDS

"WHAT DO YOU WANT to be when you grow up?" might be the wrong question to ask kids. That's because up to 50 percent of the jobs today's high school students will do don't even exist yet, according to Mark Grayson, founder of Rocket21, a career networking site aimed at middle schoolers.

Still, it's almost never too early to help students figure out what they care about, even if it's hard to identify a specific job they might do.

"We're interested in helping kids engage in an area of passion or interest," Grayson says.

"There's plenty of research that shows that when kids find a domain that's engaging it has all kinds of benefits and spillover effects in terms of their learning."

There are resources to help them with that, like the nonprofit Junior Achievement, a collection of local programs led by community volunteers that introduce the concepts of workforce readiness, entrepreneurship, and financial literacy to students, starting in kindergarten.

Similarly, Grayson's Rocket21 serves as a virtual career fair that allows kids to explore professions in a multimedia environment. A public beta test that Rocket21 started in the summer of 2011 has signed up more than 2,000 kids from around the world as members who can then communicate with industry experts and their peers. The search function takes a member to a page populated with a list of professionals in a particular field—for instance, if a student has an interest in culinary arts, he or she might be connected with a chef—in addition to providing blogs, photos, documents, audio, and videos.

"Rocket21 is a social network that enables kids to explore their interests and passions, their dreams for the future, and helps them connect with world-class experts who can help make those dreams happen," Grayson says. "And it helps kids connect with other kids who have similar interests and passions."

Groups are created based on the "top three obsessions" and "10 areas of interest" selected in a member profile, but anyone can pose a question to a pro and get a response. While the number of pros involved at this point is rather low, a recent partnership with NASA indicates the list will be growing, Grayson says.

"We're trying to help kids understand that these interest areas...are really populated with a very broad range of people doing very interesting things," he explains. "They might not end up in the NBA, but they might end up as a sports attorney or communications marketing person."

The site only allows public communication. It complies with the Children's Online Privacy Protection Act, and filters and online monitoring ensure members are protected from "bullying, inappropriate content, and unsafe interaction," according to Grayson.

For more information, go to rocket21.com.





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of thematic instruction, in the form of so-called “pure schedules.”

All scheduling starts with the student’s specific interest. If she is studying culinary arts, then all of her classes must support and reinforce her pursuit of that course of study. At the same time, all the culinary arts students take the same classes in order to collaborate on projects.

“The students need to be in the correct courses in order for the integrated curriculum to deliver,” Amy says. “They need to be in corresponding courses, so the same group of students that has physics also has to have that corresponding engineering class.”

Common planning: Teachers get the time to work together as teams throughout the year too. This allows them to track the progress of students against academic objectives and specific projects. When students are struggling, for example, a particular topic can be retaught or maybe an outside speaker can be brought in. The team is able to take advantage of new opportunities as they arise and manage the process of teaching in non-traditional ways.

Community Commitment

One career academy, Information Technology and Robotics, housed at **Spruce Creek High School**, started out in 2007 as an after-school project for students interested in participating in the FIRST Robotics international competition, in which teams of students build robots that will compete against other teams. That project led to a complete curriculum focused on technology—and it couldn’t have happened without the help of the local business community.

Businesses help raise the \$5,000 annual entry fee (none of the project fees come out of the school budget) and local professionals mentor the students through the design process.

“The Career Connections Cadre is a large group of people who are educators, economic development folks, and our business folks. They’re the umbrella of all this activity,” says Fraser, “but each academy has an advisory council focused around that particular academy.”

Cadre and advisory council members assist students by providing internships, serving as judges for competitions, offering scholarships, and mentoring inside and

outside the classroom. They also help with fundraising for special activities. But most important to the students, they offer “real world” expertise that makes the classroom work relevant.

“FIRST Robotics is the biggest robotics competition in the world. We found our kids were learning a ton of stuff,” says Dru Urquhart, director of the Academy of Information Technology and Robotics, “doing the math that was involved, the electronics, the physics—everything that’s involved from taking a robot from inception to the finished product.”

“We have engineers from the community that show up every afternoon. They come in and work with the kids until 5, 6, 7 o’clock at night showing them how an engineer works in the real world.”

Setting the National Standard

The partnerships aren’t just local either. The Ford Partnership for Advanced Studies: Next Generation Learning (NGL) works with the Information Technology and Robotics academy. In 2007, Volusia County was named a Next Generation Leadership community for embodying the principles of the partnership’s mission statement: to form alliances between “K-12 schools, businesspeople, postsecondary educators, and community leaders, mobilized to reform education and stimulate local economic development.”

“We learned a lot from Volusia,” says Cheryl Carrier, director of the Ford Motor Company Fund’s NGL initiative. “Businesses engaged in meaningful ways. They felt responsible for these students and, if they wanted their community to be prosperous and wanted their students to flourish, they needed to be involved in helping to shape education.”

She says that was demonstrated in large part by some of the digital resources the academy used, including a webinar series on progress monitoring and a wiki space. The latter serves as an information clearinghouse with blank forms, career academy standards, training videos, and more, making it possible for anyone interested

VOLUSIA COUNTY SCHOOLS’ CAREER AND TECHNICAL EDUCATION PROGRAM

CAN A HIGH SCHOOL career education program achieve the twin goals of preparing students for post-secondary education and competency in the workplace while also meeting state standards for academic performance?

Performance Standard (School Year)	Volusia Career Ed program	Districtwide
Graduation rate (2009-2010)	90%	78%
Advanced Placement (2010-2011)	96%	96%
Undergraduate Grade Point Average (2010-2011)		
Standard (unweighted)	2.94	2.71
Advanced Placement/International Baccalaureate (weighted)	3.12	2.86
Other Related Academic Activities		
Students with 10 or more absences (2010-2011)	30% <i>(1,376 students)</i>	39% <i>(8,325 students)</i>
Number of discipline referrals (2010-2011)	30% <i>(1,372)</i>	49% <i>(10,329)</i>

Source: Volusia County Schools

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in learning about the programs to access resources in a single location.

“Volusia really has systems in place,” Carrier says. “They have a superintendent who was really engaged and excited about this. They knew that they wanted to do it with high quality.”

While any program has any number of measures of success—from graduation rates to the quality of resources used in the educational process—it ultimately comes down to the students. Do they find the programs meaningful? Are they coming back to Volusia County to stay?

Current students give the program high marks, with the 2011 CTE student survey providing both statistical and anecdotal examples. Using a scale of one to five (five being excellent), 80 percent of students rated their academy experience as a four or five.

“At first I didn’t want to participate in the academy because I thought it was pointless, but now that I have been in


it for three years, it has been a big part of my life!” wrote an 11th grader in the Academy of Finance at Spruce Creek High School.

Leesa Holloway, a teacher and director of the Academy of Finance, believes her 14-year-old program benefits from the businesspeople who provide her students with the bridge between theory and practice. An affiliation with the National Academy Foundation has helped the program develop over time so that students get more than accounting classes and training in business software, Holloway says. The professional staff development offered by the organization to educators ultimately benefits the students because it expands the network of people students can reach. And in the end, her kids come back with solid feedback, proving that all the goals of everyone involved are being met.

“We’ve had a number of students come back from being in college and say that the

LINKS

- **National Academy Foundation**
naf.org
- **Ford Partnership for Advanced Studies (PAS): Next Generation Learning**
fordpas.org
- **Volusia Career Connection**
career-connection.org
- **Volusia Career Connection wiki**
volusiaacademies.wikispaces.net
- **Volusia County Schools**
myvolusiaschools.org

preparation that they made in high school has helped them tremendously in the college arena,” Holloway says. “They feel like it has better prepared them for degrees and coursework at the college level.” 

Margo Pierce is a Cincinnati-based freelance writer.



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PROFILE

DEBORAH SIXEL DIRECTOR OF STUDENT LEARNING,
KIEL AREA SCHOOL DISTRICT, KIEL, WI

>> TECHIE TOWN

Although we are a small rural school district (1,400 K-12 students with one high school, one middle school, two elementary schools, and an e-school), Kiel is on the cutting edge of technology. Our district requires student electronic portfolios and the completion of an online course as graduation requirements, and maintains an e-school to make that a reality. We have networked digital copying and printing, paperless school board meetings, a state-of-the-art distance learning lab at the high school with portable distance video carts in all other buildings, and two video production labs.

Kiel's rural K-4 elementary school has had a 1-to-1 laptop initiative since 2005. Interactive whiteboard integration with mounted projectors, document cameras, and portable laptop carts using wireless technology are a staple of classrooms in the district. A number of staff are piloting ways iPads and iPods can be used in the classroom. Kiel's reputation for technology use didn't happen overnight, nor is it to the credit of only one individual. Many people have worked to make technology a priority.

>> I'M A BELIEVER

I taught middle school reading and language arts in the 1990s, and was an early adopter of the technology we had back then—multimedia programs, PowerPoint. I incorporated all of those early types of programs into research projects or papers my students

were doing. That background as a classroom teacher is helpful for my job now. Technology has grown by leaps and bounds, and you can't separate it from the curriculum—it's part of what's going on in the classroom.

>> A STRONG FOUNDATION

As a small district, we have technology challenges, but if you have a supportive community as well as teachers who want to use the technology, it helps to bring down those barriers—and we do. We passed a referendum 10 years ago that helped us bring our technology up to full speed. In the past couple of years, the budget has been tight, and we are trying again to pass a referendum so that we can continue to upgrade the infrastructure we have.

Everyone is always most interested in the newest software program or device, but it's really the infrastructure that is the key.

>> E-PORTFOLIOS

Portfolios began in the district as a paper-and-pen collection of best works in a binder, then transitioned to documents saved on a CD, and are in their current form as a wiki. Beginning in eighth grade and continuing through high school, they learn how to set up their own wiki website; upload and organize documents, video, files, and folders; and integrate literacy and collaboration skills into this web-based portfolio.

Their completed portfolio is used during senior-year mock interviews with employers



MY TOP 3...

KEYS TO SUCCESSFUL TECHNOLOGY INTEGRATION

Invest in Reliable Wireless Technology "Teachers and students have to be able to count on the infrastructure for everyday learning."


Parent-School Partnerships "We need one, for example, for student-owned mobile devices. If it belongs to the students they are more apt to respect it and they will have access at home as well as at school."

Use of Web 2.0 Tools to Make Learning Interactive and Personal "Students are already engaged in web 2.0 social media. We need to engage them with web 2.0 for academic learning."

from the community and surrounding areas. We wanted to make this something that is purposeful for students, and bringing in that mock interview ties the community to the school and shows the community what our students are able to do.

>> ONLINE AS A MATTER OF COURSE

The Kiel e-school is an online school established in 2002 that provides students alternatives to the traditional school. Students can attend completely online or request online courses in their schedule. Students take online courses for a variety of reasons. Some are failing or credit-deficient; others want accelerated courses, have schedule conflicts, or want a course not offered in the traditional setting.

As online learning continues to grow, all students will be taking some form of online course or training, whether during college or at their workplace. If we can expose students to online formats and experiences early on, it's only to their benefit. 



Do you know a K-12 technology leader or tech-savvy administrator or teacher we should profile? Tell us! E-mail michaelhart@1105media.com.

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